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(54) Improvements in and relating to flat electrical connector pins

(57) Connector pins for flat pin electrical pins are made by slicing an extrusion having a tapered portion (11) at one end, a relatively enlarged head portion (13), and a medial interconnecting portion (12) of parallel-faced form. The relatively enlarged head portion has a wire-accommodating formation (14) having a flank part (15) readily locally deformed (18, 19) by a percussive tool to secure and contact a wire (16) in said formation (14). The formation may be a slot as shown centrally situated or offset as shown or may be a through passage in the head portion.

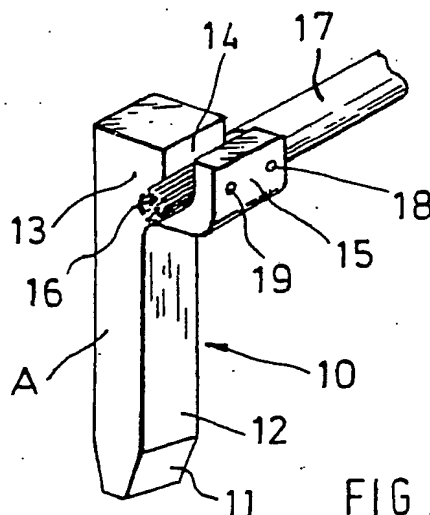
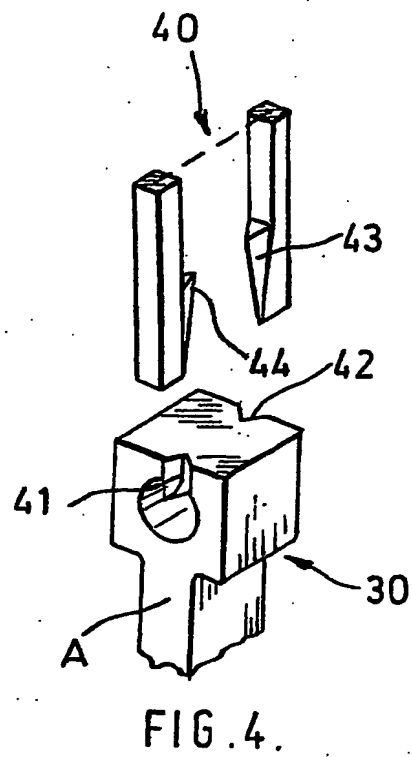
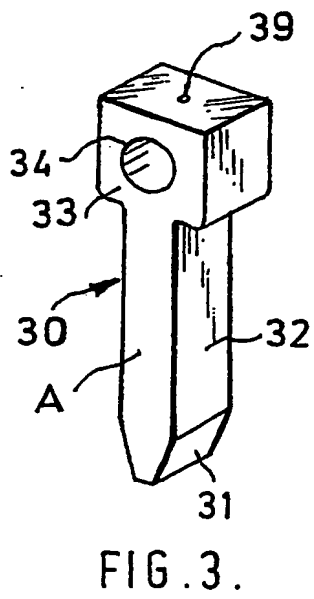
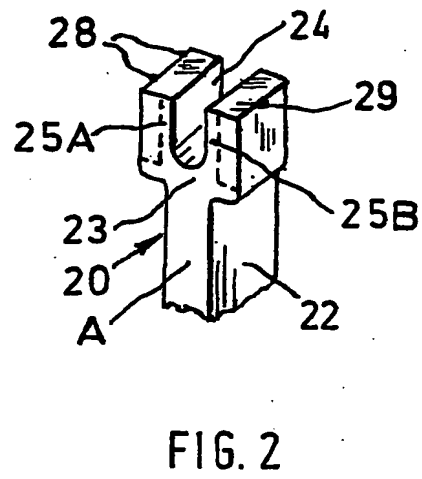
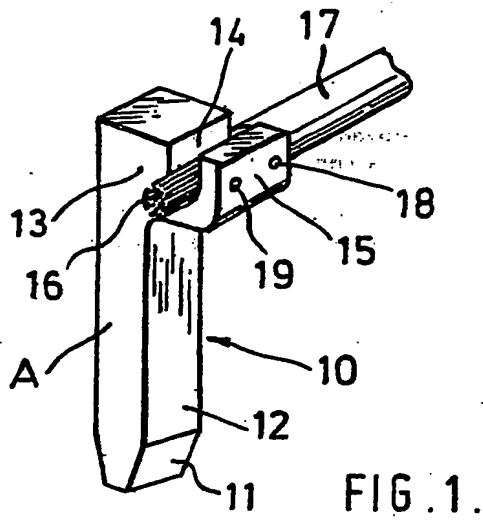


FIG. 1.

GB 2 099 240 A

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SPECIFICATION

Improvements in and relating to flat electrical connector pins

The invention concerns improvements in or relating to connector pins for so-called flat-pin electrical plugs, typified by the standard British 13-amp 3-pin ring main plug.

Such pins have heads and reduced section socket-entry ends. They are usually made from stock extruded to a desired profile with one tapered side connected by a parallel-faced extension to an enlarged section onto its other side. Slices from such an extrusion then have their heads drilled and tapped for wire accommodation and screw-clamping.

In relation to making non-rewirable electrical plugs we now propose improved pins sliced from extrusions as mentioned above with the modification that said other side of the extrusion has a lengthwise hole, slot, groove or channel therein to accommodate an electrical conductor wire, and an improved way of making so-called non-rewirable connections simply by subjecting at least one flank part of that hole, slot, groove or channel to the action of a percussive tool to deform it into securing electrical contact with that wire, an action that we shall herein call "twacking".

Aspects of this invention thus include extrusions from which connector pins are to be sliced; methods of making connector pins as such slices; connector pins as so made; methods of making wired connector pins by "twacking" such pins with wires in place; wired connector pins as so made; and non rewirable electrical plugs having such wired connector pins. The depth of a slot of channel should exceed the maximum nominal diameter of single or multi-strand wire to be accommodated. At least when only one flank is to be "twacked", it is advantageously thin enough to deform substantially, even partially or completely over the wire. Otherwise, at least where both flanks are to be twacked that is advantageously done at non-registering positions the better to grip if not multiply bend or deform the wire.

Specific embodiments of the invention will now be described, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a perspective view of one embodiment; Figure 2 is a perspective view of another embodiment; and

Figures 3 and 4 are perspective views of a further embodiment.

In Figure 1, a connector pin is shown at 10 with one tapered end 11, a wholly parallel-sided medial portion 12, and a headed end 13. The headed end 13 is shown extending only to one side of the medial portion 12 and terminates in a U-shaped slot 14 with a comparatively thin but still readily extrudable distal flank 15. The normal or maximum diameter of connecting wire 16, bared of insulation 17 at its end, will fit snugly into the slot 14 whereupon the relatively thin flank 15 is twacked at spaced positions 18, 19 if not also, preferably first, bent over the wire

In Figure 2, connector pin 20 is similar to pin 10 except for its headed end 23 which extends to opposite sides of its medial portion 22 and has a central slot 24. In general, flanks 25A, 25B will be thicker than flank 15 of Figure 1, though not necessarily much so as they may be reduced relative to a heading flange needed for pin retention purposes, see dashed lines. Spaced twacking positions 28 are shown on flank 25A spanning a twacking position 29 on flank 25B.

Any suitable "twacker" may be used, for example a spring-loaded, sharply-pointed or edged tool.

Both of the illustrated connector pins 10 and 20 are sliced from brass extrusions and require only twacking to couple connectors in a non-rewirable plug to which they are fitted. The nature of suitable extrusions is apparent from the drawings, taking a face such as reference A as an indication of cross-section for the extrusion.

Figure 3 shows a further connector pin 30 with a tapered end 31, a wholly parallel-sided medial portion 32 and a head 33 with a through-hole 34 for twacking at 39 after insertion of a connecting wire (not shown). Clearly, either or both of flanking faces may be additionally or alternatively twacked at any desired position or positions by a pointed tool. A forked tool 40 is shown in Figure 4 for percussive engagement of "ends" of the head 33 adjacent to the hole 34 to deform material onto a conductor wire as indicated at 41, 42, preferably by triangular section tapered tool ends 43, 44 to reduce any tendency to grip the head 33.

The sizes and shapes of head portions, medial portions and tapered ends of the connector pins hereof are readily chosen or modified to fit any desired flat pin electrical plug according to through-holes therein and head accommodation thereof.

If desired, of course, parallel-faced medial portions could be locally reduced for insulation purposes. As used herein, "parallel-faced" includes any local stepping for such local reduction.

CLAIMS

1. An extrusion to be sliced in making connector pins for flat-pin electrical plugs, the extrusion having one side tapered and connected by a parallel faced extension to an enlarged section at its other side, which enlarged section has a lengthwise hole, slot, groove or channel capable of accommodating electrical conductor wire and at least one flank part of that hole, slot, groove or channel deformable by a percussive tool into securing electrical contact with such wire.

2. An extrusion substantially as herein described with reference to the accompanying drawings.

3. Method of making connector pins for flat-pin electrical plugs consisting of slicing an extrusion according to claim 1.

4. Method of making connector pins substantially as herein described with reference to the accompanying drawings.

5. Connector pins for flat-pin electrical plugs made by the method of claim 2.

6. Connector pins substantially as herein de-

scribed with reference to and as shown in the accompanying drawings.

7. Method of making electrical connection to a connector pin according to claim 5, comprising placing electrical wire in said hole, slot, groove or channel, and striking said flank part with a percussive tool.
8. Method according to claim 7, wherein said striking causes deformation of the flank of a said slot or channel at least partially over said wire.
9. Method according to claim 7, wherein said striking effects deformation at non-registering positions so as to achieve separate secure electrical contacts.
10. Method according to claim 9, wherein said striking effects plural bends or deformations on said wire.
11. Method of making wired connector pins substantially as herein described with reference to the drawings.
12. Wired connector pins in or for a flat-pin electrical plug, connected by the method of any one of claims 7 to 10.
13. Wired connector pins substantially as herein described with reference to and as shown in the accompanying drawings.
14. A flat pin electrical plug fitted with connector pins according to any one of claims 5, 6, 12 or 13.